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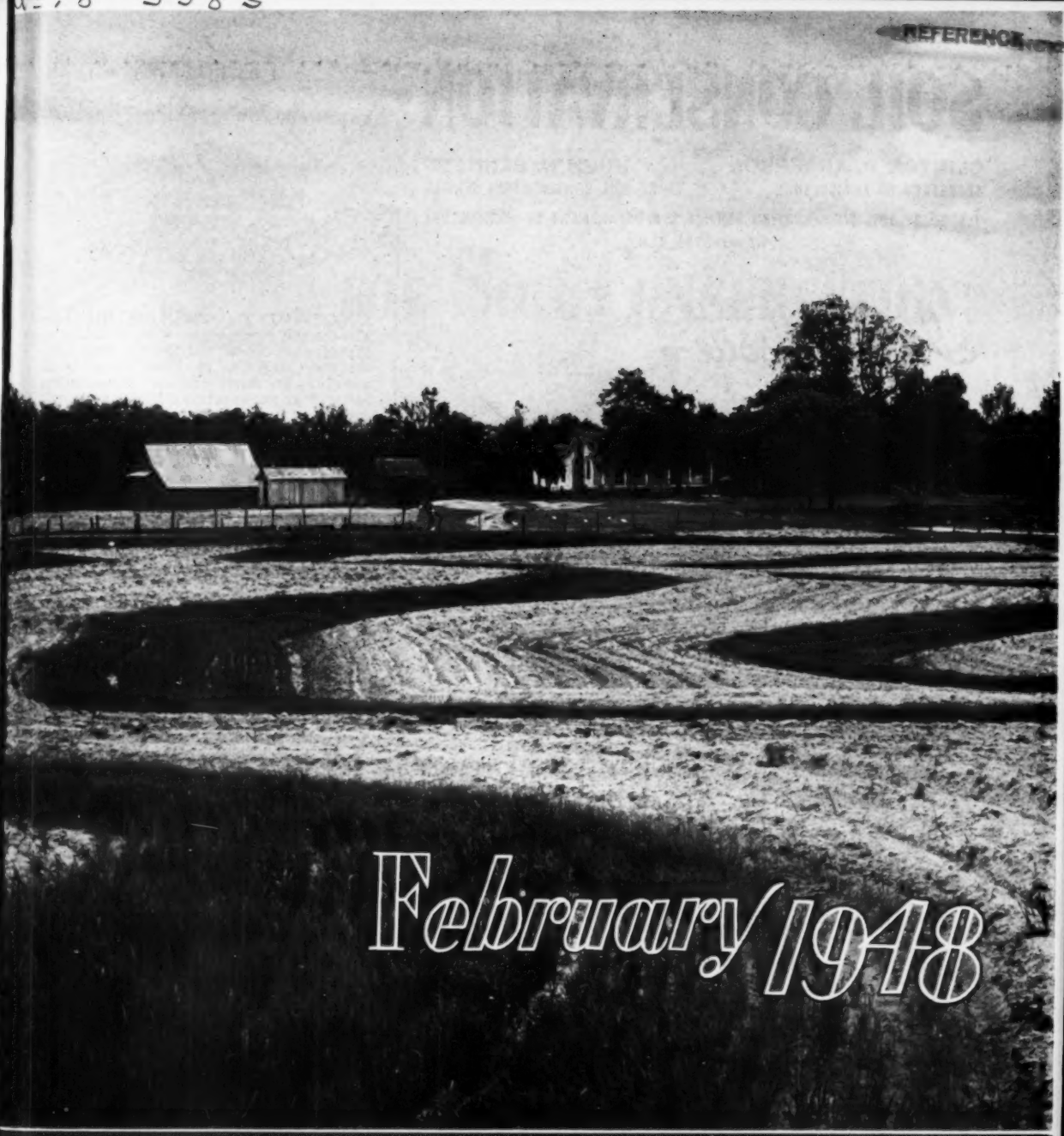

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Editor
Art Work by
W. HOWARD MARTIN

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with approval of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

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SUGGESTION TO OTHER DISTRICTS.—The district commissioners in the Johnson, Washington, Iowa, and Keokuk Soil Conservation Districts in Iowa (SCS work group 18) are sending a year's subscription to the SOIL CONSERVATION Magazine to the firms that contributed in a financial way toward the conservation field day and contour plowing contest held in September. The total number of subscriptions is 117. The commissioners also subscribed to the magazine and their subscriptions are included in the 117.

SUPERVISORS HIRE CREW.—Small concrete structures have trebled in number in Morrill County, Nebr., because of the purchase of equipment and the hiring of a concrete "crew" by the Morrill County Soil Conservation District during the past season.

Available on an hourly rental basis to farmers cooperating with the district, the crew efficiently and quickly built concrete irrigation structures as planned by Soil Conservation Service technicians assigned to the district. This arrangement provided many farmers with irrigation structures not otherwise available because of labor shortages.

Cost to the farmer, since it is figured by the hour, was reduced according to the labor furnished by him and it also repaid the district for its maintenance costs, salaries, and investment.

The crew consisted of three veterans and they were equipped with a complete set of modern, time-saving equipment and forms.

FRONT COVER.—The oat crop zoomed under conservation measures on the farm of M. J. Pearson, Farmerville, La. These 18-foot strips lie above terrace channels. Nitrate of soda was applied, adding further to the yield.

Let's make 1948 the best year yet for conservation accomplishments on the land!

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Specialized Education FOR SOIL CONSERVATION

By H. C. DIENER

ONE OF THE MORE RECENT SCIENCES in the educational field is soil conservation. Many of the practices used to prevent erosion are not new; a great many of the ways to raise the fertility of the soil are not new; some of the agricultural engineering methods used to carry water without scouring or gouging the soil are old in terms of years; reforestation and forest management for sustained annual yields on small woodlots on the farm are not in their infancy. However, the analysis of farm land in terms of soil, slope, erosion, cover, drainage, and other physical features, to determine the capability and adaptability of each acre, is new. This changing of land use to produce only those crops suited to the physical features of the land, the farm-management feature in farm work and farm organization, the use of soil amendments and supplementary practices, create what is known as conservation farming. Conservation farming is relatively new. That is why education for conservation farming is rapidly developing.

Young people who wish to have professional careers in agriculture are looking with much favor on soil conservation. The soil conservationist does not guess. He must work with facts. He must bring to bear specialized knowledge and rare good judgment to cure the ills of the land wherever they exist. He must have education designed to fit him for this profession.

The farm machinery manufacturing industry is developing specialized implements for conservation farming. These agricultural implement industries have been scouring the field for trained soil conservationists to aid in designing power tools for this type of agriculture. Even bankers and creditors are asking that conservation farming be applied before extending loans to farmers. Their fiscal employees need conservation education.

The unusual demand by farmers, industry, merchants, and others for greater knowledge of soil conservation has led colleges and universities to expand their curricula. Soil conservation is now no longer a sideline to other agricultural sciences—it is a full grown science in its own right.

This expanding interest in special education in the field of soil conservation has led to the introduction in colleges and universities of specifically designed courses. These courses are labeled "soil conservation." They teach students practical management of soils from the land-use side. They include: how to use land, soil amendments, tillage methods, crop rotations, soil conserving crops and practices, irrigation, drainage, adaptations of various farming systems to soil types, and many other features which make conservation farming possible and profitable.

More recently, many institutions of higher learning have integrated these courses with the necessary general agricultural courses, in a curriculum which grants a degree in agriculture with a major in soil conservation. This curriculum in soil conservation, in most cases, aims to give students a broad liberal education. It prepares them for intelligent practical farming; enables graduates to teach agriculture from the soil conservation angle, or to do professional soil conservation work with private agencies, and local, state, or Federal governmental agencies.

Nearly all of the agriculture colleges and universities in the United States have introduced one or more individual courses in soil conservation. Many allied courses have been developed which

NOTE.—The author is head, training section, Soil Conservation Service, Washington, D. C.

have as a guiding principle the element of soil conservation. Specialized courses in certain soil conservation practices and methods, such as terracing, building stock and water ponds, or waterflow retarding structures, have been made a part of the regular agricultural curriculum. Most of these have been developed as elective subjects to fill a gap found in the academic curriculum since soil conservation came to the front.

Training in soil conservation, the same as any other agricultural branch of learning, is based upon an understanding of all the sciences, and a knowledge of effective agricultural organization, practices, processing and marketing. In general, the colleges which have introduced soil conservation as a major study have followed the traditional pattern. The first 2 years are devoted mainly to the foundation sciences—botany, chemistry, physics, mathematics, English, and other academic subject matter. This builds a broad general background of education. The last 2 years have placed emphasis on agricultural subject matter, with soil conservation being the tie which binds the selected subject matter into an integrated curriculum.

Eleven of the State Land-Grant colleges and universities are now offering a degree in agriculture with a major in soil conservation. The 11 colleges which list such major, according to their most recent catalogs, are: The University of Florida, the University of Georgia, the University of Idaho, Iowa State College, Kansas State College, Louisiana State University, Michigan State College, the University of Nebraska, Ohio State University, Oregon State College, and the University of Wisconsin. There can be no doubt concerning the popularity of this educational trend. The fact that these institutions were willing to introduce courses and majors in soil conservation and provide instructors to supply this demand is ample proof.

All of this educational development in soil conservation has taken place since 1936 when the first books on the subject were written and the first college courses were introduced in the curriculum.

During the college year of 1946–47 approximately 1,363 students were enrolled in soil conservation courses in colleges and universities. In the first semester of the 1947–48 college year there are 1,554 students enrolled. Anticipating a similar increase in enrollment for the second semester would give approximately 2,600 students. This is an increase of 100 percent over last year. Most of the 11 colleges which offer majors in soil conservation have introduced these curricula so recently that no correct measure of numbers of students for degree work can be given. However, indications point toward a large following being developed from those students who are taking specific individual courses.

Soil conservation, in general, is one of the newer postwar opportunities offered to the younger generation. Increased agricultural production to supply food to the world is, and will be for some years to come, a major problem.

Along with better types of crops and animals, better methods of control of insects and diseases, better implements and machinery, better fertilizers and soil amendments, soil conservation farming is a recognized method of increasing production. Education for soil conservation farming or professional soil conservation work has a place in the American academic field of schooling.

ONE THING LEADS TO ANOTHER.—Irrigation to the farmer means more than putting water on the land. It involves getting the land in shape for using water efficiently. It includes drainage. And it includes farming to prevent erosion.

E. J. Mitchell, near Bridgeport, Nebr., a cooperator with the Morrill County Soil Conservation District, is improving his irrigation system by leveling land, revising his water distribution, and repairing his drainage structures. Part of his drainage problem is to clear up 10 acres of water-logged land.

Mitchell has a 320-acre farm, but most of the western half could not be irrigated until the conservation plan he and the technicians worked out was applied. Leveling soil which had drifted from a sandy irrigated area into an old fence, and cleaning existing drainage ditches were two of the big jobs. They were done with equipment rented from the district.

The use of cover crops, crop residue management, grass in the crop rotations are part of Mitchell's conservation plan. Part of the land which had become drifted will be seeded to a mixture of alfalfa and bromegrass for irrigated pasture.

Mitchell's irrigation improvement is characteristic of that which is in full swing in the North Platte area. At present, 18 contractors are busy in that territory working on jobs planned by district technicians for farmers cooperating with soil conservation districts.

SMOOTHING THE WAY TO PROFITS.—Leveling land so that it could be irrigated really paid out in higher yields this year reports Mrs. M. Sorenson of Arcadia, Nebr., a cooperator in the Valley County Soil Conservation District.

The land is a 9-acre field that formerly produced no more than 2 tons of alfalfa hay per acre, Mrs. Sorenson said. It was too irregular to irrigate. It was leveled, a border irrigation system was installed, and alfalfa was seeded in the spring of 1944. This year, the yield is reported as 5.9 tons of alfalfa hay per acre.

Land leveling and irrigation improvements are part of the farm conservation plan which she worked out with the help of Soil Conservation Service technicians aiding the district. Other parts of the plan include an improved crop rotation, fertilizing, good pasture management, and rearrangement of the fences.

Soil Sleeps Under a Fodder Blanket

Two-row corn-picker at work. It's self-propelled. The vegetation stays right on the land.

By WELLINGTON BRINK

AT THE TAIL-END of the 1947 harvest season I visited a number of farms in West Virginia's Panhandle to see some corn pickers at work. In this area the corn picker is a comparatively recent innovation. Therefore, it comes fitted with the very latest improvements which make it an increasingly potent force in the current agricultural revolution.

The picker now carries a dual wallop. It helps lick the labor problem and, in addition, it helps to conserve the soil. On both scores, the advantages are so obvious that its popularity far out-runs the available supply of machines. Many a farmer, lucky enough to get delivery on one, now harvests his own crop and also those of his neighbors—and out of his earnings he pays for the picker in a few weeks.

The new corn picker saves labor, time and money. At one fell swoop it removes ear from stalk, husk from ear, carries the ear back to a wagon for hauling to the crib, cuts up or shreds the stalks, leaves the shredded material on the ground as mulch, releases the land immediately for other use, gives the farmer time to repair fences, build ponds, do many of the things he never before got around to doing.

Mrs. Hamilton Horner, on route 3 out of Martinsburg, started farm work at 8 years old. She loved the land and she loved machinery. She raked hay, mowed hay, harrowed. She learned about carburetors, gears, and generators, along with the lore of livestock, plants, and soil. She learned to repair and maintain both implements and land. In 1929 she inherited the farm, and to it she has continually added machines and implements which she had paid for out of their "custom" earnings. She has run hay balers and combines and, more recently, a corn picker.

"I don't think many of our farmers will continue to let corn sit out all winter waiting to be shucked," she told me. "These new pickers get the job done quickly, do away with the risk of spoilage, keep the manure and 'fodder' in the fields. A one-row picker handles about one acre per hour."

James H. Conklyn, district conservationist of the Soil Conservation Service, piloted me to key farms and key people in Morgan, Berkeley, and Jefferson Counties, all of which are included in

the Eastern Panhandle Soil Conservation District. *He gave me a roadside view of field after field, bedded down with disked-over "fodder,"* some of them already sprouting wheat from new plantings. Well over half the corn is being mechanically picked and the "fodder" left on the fields as a mulch.

Julian Everly, who both farms and serves as secretary-treasurer of the National Farm Home Association, kept comparative cost figures for two comparable fields he owns, one hand-picked and the other machine-picked. He told me that it cost him $1.60 per shock—$20.80 per acre—to harvest by old-fashioned methods, as against $6.73 the modern way; and, of course, the machine gets the job done earlier, puts vegetation back onto the ground, and clears the way for the speedy planting of wheat over the whole field.

George S. Marlow, using a two-row picker, harvested 50 acres in 25 hours, and put 6,000 acres in the crib in jig time.

John C. Welsh is known as an adventurous farmer. He has an experimental turn of mind, is a close observer. He prospers, even under the handicap of bachelorhood. He started mechanical corn picking in 1940—probably the first farmer in his community to do so—with a one-row machine represented as having a seasonal capacity of 50 acres. Actually, he harvests as many as 400 acres. At top speed he shucks up to 700 bushels of shelled corn in 10 hours. He likes to see those big fat ears sliding through the machine, while the stalks stay on the ground. *Welsh finds that the clover and grass* grow 6 inches higher after mulching. "I get 10 bushels more of wheat or barley as a result of the practice," he says. "The soil is spongier, the fertility higher. And, of course, the lessened erosion is a mighty important factor. The water slows down when it hits the mulch. And the vegetative protection also prevents splash erosion by raindrops."

By the middle of September this year Welsh was through with his picking and got his barley seeded promptly. It didn't come up for a month. He turned his cattle in immediately. The weather was dry. As soon as the rains came, he took the cows out of the field. But Welsh claims that he turns the shoats in any time. Last year they browsed until Christmas—"and I made 35 bushels of wheat." They love those occasional kernels when they are beginning to sprout in the cornshucks, and the sprigs of young grain. And they pay for this good eating by leaving manure in the fields.

ORCHARD IRRIGATION.—An orchard yielding from 5 to 6 bushels of peaches per tree is the result of a planned conservation program carried out by Leslie Bringhurst, Toquerville, Utah.

When Bringhurst took over the management of the farm from his father, he faced several tough irrigation problems. Irregular land caused water to accumulate in low areas and there was excessive erosion and loss of water. Bringhurst solved his problem by land leveling, but there were additional soil and water problems that required the assistance of soil technicians, so he asked the board of supervisors of the LaVerkin-Ash Creek Soil Conservation District for help. His major objective was to work out a complete program of soil and water conservation.

The plan, as worked out by Soil Conservation Service technicians, included the construction of approximately 1,000 linear feet of soil-saving rock terraces. The terraces have protected the soil and brought about efficient disposal of waste water. The plan also called for a revision of the irrigation system for irrigating at right angles to the slope, rather than down the slope. Irrigation runs were shortened and 22 headgates, which save considerable labor, were installed.

Today there is no run-off from the Bringhurst farm. A sweet-clover crop is maintained on the orchard to hold the soil and supply nitrogen. Trashy cultivation leaves the major portion of crop residues on the surface, thus preventing the formation of a crust.

This type of tillage also eliminates competition for soil moisture between the cover crop and trees. A portion of the crop is worked into the soil for green manure, which increases the humus of the soil and allows greater penetration of moisture. Bringhurst also applied barnyard manure to the orchard, which increases the moisture-holding capacity of the soil. Ammonium phosphate is applied to the orchards at a rate of 200 pounds per acre.

This planned conservation program produced trees uniform in size and shape, and a peach crop high in quality and above average in yield.

RIGHT LAYOUT SAVES HEADACHES.—Easier and quicker irrigation results from improvements as a part of a farm conservation plan, reports George Hedges near Central City, Nebr., a cooperator with the Merrick County Soil Conservation District.

Hedges has about 150 acres under irrigation from two wells. He started development of the system 4 years ago. He was well along with the system when he started cooperation with the soil conservation district and received aid from Soil Conservation Service technicians.

"We got a pretty good system of ditches laid out on most of the land by trial and error," Hedges explained, "but after we started cooperation with the district we really learned what it means to have technical help.

"Some changes were made in the existing layout that improved it, and on land not yet irrigated the technicians' help enabled us to make the layout right the first time. That saved both labor and expense."

The net result, he added, is that water can be applied to the fields in less time than formerly.

Hedges goes on to explain that besides saving work and time, improvements in the irrigation system enable him to apply water uniformly over the field. Thus, no part needs be over-irrigated in order to get water on other parts of the land.

"It seems to me," Hedges remarks, "that it's necessary to keep from getting too much water on the land. It'll seep the plant foods down just as where rainfall is heavy. Good irrigation prevents that—and it's decidedly a part of soil and water conservation."

One-row pull-type corn picker. It takes the ears, leaves the stalks in field.

Japanese beetles were at their worst in 1947. Welsh, however, was troubled very little by them. He planted early and—thanks to the corn picker—he also harvested early. "It's the late beetles that hurt," he says.

W. N. McClung, Berkeley county agent, figures that on his own farm the cost of harvesting by the old methods runs to 40 percent of the crop, or 16 bushels per acre. With mechanical picking, however, harvesting is accomplished for $6—or 3 bushels—per acre. "The food value of the fodder is more than offset by increased wheat production from mulching," he finds. "And there's another factor, sometimes overlooked. About 1 acre in 10 is taken up by the shock rows, which are eliminated when picking is accomplished by machine."

F. M. Welsh, brother of John, is convinced that "we are doing better farming than we did 25 years ago. It's good soil conservation practice to leave the 'fodder' in the field. Any time we put humus back in the ground we improve production."

J. E. Saville, Jefferson county agent, points out that most pickers work at highest efficiency in the morning when the corn is not too dry.

Most farmers, however, report generally clean results under all harvesting conditions. A great deal depends upon the individual operator and still more depends on the machine and its equipment. Some farmers told me that sweet corn can be harvested perfectly.

Disking is very generally practiced—a method which effectively cuts up the stalks in the field and leaves the "fodder" as an excellent mulch. Still more modern, time-saving equipment is moving into this area, however—equipment which shreds the fodder, effectively crushes cornborers, and creates an even better mulch than disking.

The corn picker, arriving simultaneously with the soil conservation movement in the Eastern Panhandle, has kindled the imagination of farmers, landowners, and equipment specialists. The labor scarcity has served to fan the flames. They are talking about the opportunities awaiting pickers that shell the corn from the ear, and of drying equipment for handling the shelled corn right on the farm.

George Heidrich, district supervisor, sees in the corn picker a great conservation tool, the implication of which extends far beyond its use in speeding crop to crib. The picker is an example of the fact that both farmers and manufacturers are becoming conservation-minded; that just about all modern farm gadgets are being developed within the pattern of the conservation idea, with a view to adapting every mechanical innovation to the furtherance of soil-conservation and soil improvement.

SCIENCE TELLS US HOW TO GROW CORN

By A. E. McCLYMONDS

WATER lost through up-and-down-hill farming on sloping, fairly heavy land this year was apparently worth about $15 per acre to farmers, figured at present corn prices.

At least, that's the experience this year at the United States Soil Conservation Service experiment station near Hastings, Nebr., where small watersheds are farmed in various ways in order to measure the influence of conservation farming in controlling floods in small tributaries.

The experiment station is on the Matie Eigenberg and Fred Lampman farms, 22 miles south of Hastings. The watersheds are similar, and the same crop rotation has been used on all of them during the last decade. Seven of the watersheds were in corn this year.

Fourteen and two-fifths bushels of corn per acre was the yield on the watersheds farmed up and down hill, with a 3-year crop rotation of corn, wheat, and oats. That is, corn is planted there every third year.

On the watersheds where contouring was added to the crop rotation to conserve water, however, the yield was 20.9 bushels per acre—6½ bushels more than on the straight-rowed watersheds.

And on the watersheds where subsurface tillage is practiced for all crops in the rotation, the yield was 20.7 bushels per acre, about the same as on the contoured watersheds.

Low as the yield was on the watersheds at the station that are farmed up and down hill, it was double the yield at many places in the territory where the practice has been to grow corn on the same land year after year.

Few, if any, of the fields examined in Adams County are estimated to yield more than 5 bushels of corn per acre—if it is harvested. That is 16 bushels less—about $36 less at present corn prices—than was produced per acre in the watershed where subsurface tillage and a crop rotation are practiced.

On the face of the figures, the crop rotation alone was worth in the neighborhood of $20 or $21 per acre in terms of corn production. And the addition of the other soil and water conservation measures, which increased the amount of water that went into the soil, increased the earnings per acre of the land still more—about $15 per acre more at present prices.

How much greater, if any, the corn production would have been with complete conservation applied isn't known. None of the watersheds where that has been done was in corn this year.

Probably at least as important as the greater earnings to the individual, however, is the loss of corn through lack of conservation in this year when the Nation's corn crop is short.

Right now, everyone is urged to conserve food in order that enough will be available to relieve the sorry plight of most of the rest of the world. Yet, it is entirely possible that, had complete soil and water conservation been general, the necessary food could have been raised without difficulty.

And every bucket of water that can be held up on the land where it can help crops is a bucket less in the small streams that so often are sent out of their banks to damage bottomland crops and towns and villages.

This is the field from which the small corn plant shown in the other picture was taken. It is typical of the straight-rowed corn south of Hastings, Nebr., seen last year when a hot, dry summer followed a wet spring.

NOTE.—The author is regional conservator, Soil Conservation Service, Lincoln, Nebr.

Study in contrasts: A nubbin goes visiting a lusty neighbor. The nubbin is from a field kept in corn for years and farmed up and down hill; yield, not over 5 bushels per acre. The better corn, seen in this field, is a product of contour farming and crop rotation; yield 20.7 bushels per acre.

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Hairy Vetch the Versatile

Close-up of hairy vetch and abruzzi rye; root system holds soil together, helps improve tilth.

By W. M. NIXON

HAIRY VETCH is a staunch warrior valiantly fighting the battle of soil erosion and depletion in Arkansas, Louisiana, Oklahoma, and Texas.

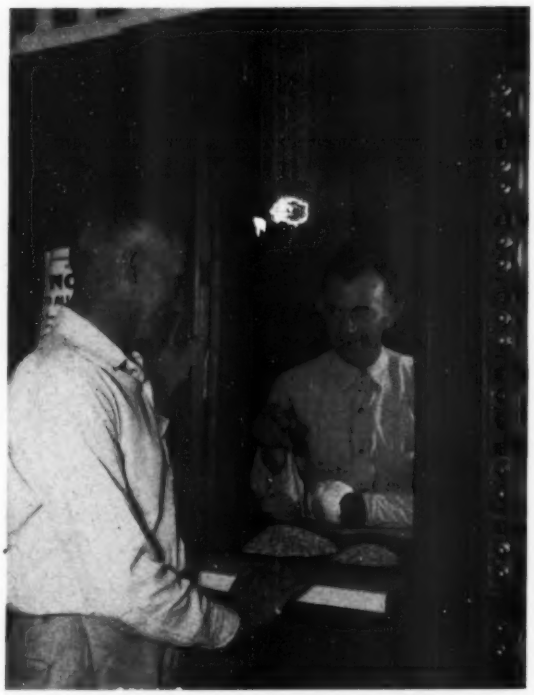
Though this legume has been grown to a limited extent for many years in parts of this section, only during the past 10 years has it assumed a major role in the soil conservation program. Fresh impetus has been given to its use by successful pioneering work on seed production in soil conservation districts in the Cross Timbers area of Texas and Oklahoma. Within the short span of 5 years the Cross Timbers has become a major hairy vetch seed-producing area. A considerable volume of seed is produced also in Arkansas.

Hairy vetch is a versatile crop: It protects the soil against erosion, improves the soil by supplying nitrogen and organic matter, furnishes good grazing, makes good hay, and puts extra cash in the farmer's pocket when seed is sold.

When used with other soil conservation practices in an integrated program, hairy vetch is extolled by farmers for its many virtues. Here are some typical experiences reported by soil conservation district cooperators:

NOTE.—The author is regional agronomist, Soil Conservation Service, Fort Worth, Tex.

Lowrey Walker, manager of the Walker Brothers' farm near Springdale, Ark., in the Benton County Soil Conservation District, tells of getting 12 percent more apples after planting a



Vetch increased the oat yield from 15 bushels per acre to 60 on the farm of G. F. Wimberly, postmaster of Perrin, Tex. He illustrates the feat with 16- and 4-ounce piles, for the benefit of J. M. Dickenson, smiling supervisor of the Upper Leon Soil Conservation District.

Harvesting hairy vetch for hay on a farm near Chickasha, Okla. The vetch in the background is being kept for a seed harvest.

vetch-rye cover crop. This figures out about $72 per acre more revenue. A crop of vetch turned under for green manure, Walker calculates, is equal to a car of Kansas City fertilizer. "But," he declares, "the big advantage is that the vetch and rye crop makes the land so mellow it takes up most of the rain. During many of the spring rains there wasn't any run-off. And, of course, there was no soil washing."

Howard Anderson, Fayetteville, Ark., thanks his soil-building hairy vetch for his having grapes worth harvesting when many of his neighbors lost theirs because of a hard freeze at a critical time. Anderson got the benefit of the higher prices resulting from a short crop. His revenue from grapes was only 18 percent less than it was the year before, instead of being cut by half or more, as was the case generally in his locality. "My experience in previous years," Anderson said, "is that vetch boosts grape yields about a ton per acre, besides checking erosion."

John O'Neill, Marshall, Okla., reported to his Cottonwood Creek Soil Conservation District that his wheat crop more than doubled after the installation of his conservation program which included vetch as a soil-improving crop. Wheat following a green manure crop of vetch yielded 22 bushels per acre; without vetch, 10 bushels. All wheat was planted the same day.

L. T. Cathcart, Grapevine, Tex., Dalworth Soil Conservation District, reported that when corn followed vetch he got 40 bushels per acre, whereas "if I get 10 bushels per acre from the corn following peanuts I feel that I'm lucky."

F. L. Lemley, McGuire, Tex., Swisher County

This vetch on the W. W. Miller farm near Natchitoches, La., will be turned under as green manure and followed by soy beans. Corn was grown after turning vetch under the two previous years. Before vetch was used the average corn yield on this farm was 10 bushels per acre; after vetch, 40 bushels. Vetch increased his cotton yield from 100 pounds of lint per acre to 550 pounds.

J. B. Eberheart, of Rising Star, empties vetch and rye seed into a small electric seed cleaner while an assistant pours the clean seed through a gravity-flow seed separator.

Soil Conservation District, overseeded wheat stubble with hairy vetch 2 years ago, the field consisting of light, blow-type soil of low fertility. He kept the field in wheat and vetch for 2 years as pasture before planting it to sorghums. As a check, he planted the same acreage without vetch. All sorghums were planted the same day and received the same treatment. When he combined the sorghums from both areas, Lemley found by actual measurement that the vetch land produced 16 bushels per acre more sorghum than the area not having the benefit of this green manure crop.

Delmar Pearson, supervisor of the Cottonwood Creek Soil Conservation District, has found hairy vetch to be a profitable crop on his 480-acre wheat and livestock farm located 7 miles west of Guthrie, Okla. Pearson calls vetch a "five-in-one" crop. Of 80 acres of vetch, all was used to some extent for supplemental pasture, 40 acres were used for hay, producing more than a ton per acre, 30 acres were plowed under as green manure; 20 acres were harvested for seed; and the entire 80 acres were well protected against erosion. More than 200 district farmers toured Pearson's farm and saw at first hand why hairy vetch should be included in a conservation crop rotation. "I know that my wheat yields have increased almost 50 percent since I began using vetch for soil improvement," Pearson told the group.

John O'Neal, also a supervisor of the Cottonwood Creek Soil Conservation District, is outspoken on the value of vetch for soil improvement. "My wheat following vetch grew faster, was stronger, the heads were larger, the seeds more plump and of better quality, and the yield was more than doubled," O'Neal said. He farms near Marshall, Okla.

W. B. Ingram, who farms 5 miles east of Shawnee, Okla., in the Shawnee Soil Conservation District, has done much to increase vetch acreage among the farmers in his group. Ingram "practices what he preaches." He plowed under 30 acres of vetch as a green manure crop and last summer harvested more than 11,000 pounds of clean seed from 25 acres. Ingram plants wheat and vetch together and separates the seed after harvest. "Vetch in the rotation has increased corn and oat yields more than one-third," he said.

George Yarbrough, dairyman near Shawnee, Okla., found hairy vetch to be exactly what he needed to provide off-season green forage and to help improve his soil productivity. He first planted vetch on 5 acres of depleted land in the fall of 1944 as part of the combination of conservation measures he follows under his cooperative agreement with the Shawnee Soil Conservation District. Finding that the vetch provided nutritious grazing for his cows in late winter and early spring when other farmers had only dry feed to offer, Yarbrough has since increased the acreage planted to this legume.

W. H. McCormick, Rogers, Central Texas Soil Conservation District, who farms deep, black, waxy soils of the Blackland Prairie, said: "Vetch land plowed as easy as anybody's east Texas sandy land but when I'd turn the cross row into the field that had grown cotton last year, my plows would turn up clods as big as my head and as long as my leg. My tractor operated in the vetch with the throttle down only 3 notches but it had to come down 6 or 7 notches in the adjoining field. I figured that I used a gallon of gas per acre on the field where vetch was planted and a gallon and a half on the other field."

C. E. Barnhill (left) and E. S. Cordell, technician of the Soil Conservation Service, ponder ways to fill this gully and control its washing. They hatch their plans with a view to getting eroded, idle land back to production through an integrated program of soil conservation.

HIS FENCES COST MORE THAN THE FARM

By E. S. CORDELL

WHEN FENCING COSTS more than the farm property to be enclosed, you can be sure that the land is pretty well run down.

That was exactly the experience of C. E. Barnhill of Hugo, Okla., chairman of the board of supervisors of the Kiamichi Soil Conservation District, who recently went into the ranching business for himself after 17 years of successful management of the Echo Ranch west of Hugo. Barnhill bought three adjoining pieces of land totaling 440 acres and planned to buy an 80-acre tract to give him a 520-acre unit. He then paid out more for fencing material—wire and bois d'arc posts—than he did for the land.

As might be expected, the land was cheap in these days of high prices because it was badly eroded and depleted of fertility. The 440 acres once comprised three farms that supported three families. When Barnhill went to Hugo 20 years ago, the land was doing well, producing cotton, corn, peanuts, and grain sorghum. When he bought the 440 acres, however, the land had been idle for 10 years and the three families had moved away, unable to make a living on these farms any longer. Erosion had taken its toll. Farming methods that allowed the soil to wash and blow away had reduced the land to a state of poverty. A 160-acre farm that comprised part of the 440 acres Barnhill bought sold for $12,000 in World War I. He picked it up for a song from a loan company. The improvements on it had been destroyed by a tornado in 1927 but the reason the 160 acres went for so little was that the land was simply played out—eroded and unproductive.

In fact, when Barnhill bought it, the land was scarred with gullies and shabby in its cover of sedgegrass, needlegrass, weeds, and sassafras, invading plants that follow in the wake of erosion. On one of the old farms a previous owner had recognized that erosion was eating away the top soil and had tried to do something about it. He built terraces which can still be seen. But lacking engineering knowledge, he built them wrong and they merely speeded up the erosion.

"The fellow did the best he could," Barnhill commented as he pointed to one of the old terraces. "He recognized that something was needed to stop the erosion that was robbing him of his soil. But he didn't have the technical skill to put his terraces in properly. That shows again that

NOTE.—The author is district conservationist, Soil Conservation Service, Hugo, Okla.

there's no way of getting around the fact that in planning and building terraces you have to have the help of technicians trained for the job. The same thing is true about other conservation practices."

Barnhill has been an advocate of soil conservation for many years. He practiced conservation on the Echo Ranch, having installed a coordinated program with the help of Soil Conservation Service technicians working with the Kiamichi district. For its outstanding conservation work, the ranch was awarded a certificate of merit by the Oklahoma Bankers Association.

Barnhill is confident he can restore the eroded and depleted land he has bought to profitable production through conservation measures. He's going to develop the land into pastures for cattle, sheep, and goats.

"The first thing to do to develop a pasture is to fence it," he said. "The next thing is to run in sheep to cut the weeds out." Some ranchers will argue with him about the sheep but he is convinced they perform this useful function better than anything else. He planned to use goats to get rid of undesirable shrubs and brush.

Barnhill's conservation plan included fencing the entire area, with cross fences to divide the land into a number of pastures so that grazing can be rotated and the stock can be taken out of any one pasture at seeding time to give the forage plants a chance to re-seed. His program also called for clearing the sassafras bushes and installing fire breaks. Other measures were terracing to slow down run-off and give the soil better chance to absorb rain; sodding the entire place to Bermuda grass; spreading 2 tons of lime and 200 pounds of phosphate per acre; and overseeding with Korean lespedeza and white Dutch and other clovers suited to the soil and climate.

Barnhill planned to start his own ranch operations with 50 head of Brahma grade cattle, 150 goats and 30 sheep. When the forage reaches peak development, he expects his place to support twice that number of livestock. He planned to raise all his own feed, buying only concentrates. Seven acres were set aside for orchard and truck garden. He has moved a dwelling to the place and remodeled it as his residence.

"This land has got to produce a living for me," he declared confidently as he set about changing idle, unproductive land into a useful and profitable ranching enterprise. To date 20 acres have been terraced, a farm pond has been build, 13 acres of sericea lespedeza have been planted for hay production and 14 acres of bur-clover, black medic, and ryegrass have been sown for winter pasture.

GRASSES AND LEGUMES TESTED ON LAND UTILIZATION PROJECTS

By R. Y. BAILEY, L. B. SCOTT and L. J. LEFFELMAN

WE ARE FINDING new and broader uses for land utilization projects in the Southeast. Project lands are serving as further proving grounds for new grasses and legumes that have shown promise in Soil Conservation Service nurseries. New species are being planted on full field scale so as to get more information than is possible in observational nurseries.

Large numbers of grasses and legumes are studied in the observational phase of our regional nurseries. These observational studies are carried on under memoranda of understanding with the Bureau of Plant Industry and State agricultural experiment stations. New plants that appear to have promise in a soil and water conservation program anywhere in the southeast are studied in the observational nurseries.

New species are collected from the wild or other sources; obtained from State experiment stations, other regions of the Service, the National Observational Nursery, Beltsville, Md., the Bureau of Plant Industry, or from farmers. Those that show promise for use in the field as soil-conserving plants are increased in seed-production blocks.

NOTE.—The authors are chief of the regional agronomy division, chief of the regional nursery division, and chief of the regional land management division, respectively, Soil Conservation Service, Spartanburg, S. C.

One of our most difficult problems is to be sure that a new species is worthy of distribution after a supply of seed is available in the nurseries.

State agricultural experiment stations are not able to test all of the many promising species for us. They are furnished seed of promising new plants upon request, but they often have no facilities for carrying studies beyond small plots. Such plots give little information that we have not been able to get in our observational nurseries. They do not have the land nor the personnel for large-scale testing of plants.

We must know about the possible usefulness of new plants with as little delay as possible, because of the urgent need for adapted plant material in some of the soil conservation districts the Service is assisting.

Ladino clover in a pure stand at left has made excellent growth, whereas the clover at the right is completely overtopped by Kentucky 31 that is almost ready to be harvested for seed in seed-production areas at Chapel Hill nursery. Large-scale plantings on both upland and lowland at Dalton will give an opportunity to observe these two vigorous perennials in mixtures when grazed by livestock.

Pensacola Bahia grass made a dense sod on sandy soil at Americus, Ga., nursery. This sod needs to be enriched by a legume to increase its palatability and feed value. The extensive acreage of land at Land Utilization projects can be used for field plantings with various legumes under grazing conditions.

Our problem of seed distribution is illustrated by Pensacola and Wilmington Bahia grass (*Paspalum notatum*). These are narrow-leaf strains of Bahia grass that grow well and produce dense sod on light sandy soils where other pasture grasses are poorly adapted.

Pensacola Bahia was found near Pensacola, Fla., and has been accepted by agricultural agen-

Ladino clover in a mixture with rescue grass made a beautiful sod in mid-April at the Chapel Hill nursery. Field plantings on LU lands will give an opportunity to study such sods under grazing.

cies in the State as a good grass. There is a heavy demand for seed in Florida and we produce seed at our Americus, Ga., Thorsby, Ala., and Brooksville, Fla., nurseries for distribution to soil conservation districts in Florida.

Small amounts of seed for observational plantings on sandy soils were distributed to districts in other States in 1945 and 1946. Seed was sent to these districts with the understanding that the district supervisors would select farmers who would plant it in 5-acre patches for observation. These patches also would be used for seed production, if the grass proved useful and local farmers who observed it decided they wanted more of it.

Wilmington Bahia was found near Wilmington, N. C. It resembles Pensacola Bahia, but is more cold resistant. Wilmington Bahia has survived the winters at Chapel Hill, N. C., and Rock Hill, S. C., where the stands of Pensacola Bahia were thinned by cold. We are producing seed of Wilmington at Rock Hill and Chapel Hill for use in areas where Pensacola does not survive the winters.

Seed for a few observational plantings of Wilmington Bahia was distributed to a few districts in 1945 and 1946. These plantings were of the kind described for Pensacola Bahia.

Farmers have been pleased with the way their cattle grazed the narrow-leaf Bahia grasses in these early plantings. William Ballentine, Newberry, S. C., planted an acre of sandy land in his pasture to Wilmington Bahia. He limed and fertilized the land, as he did the rest of his pasture, and seeded clovers and lespedeza with the grass. His cattle grazed the Bahia closer than they did other grasses in his pasture during the entire 1947 season. Pensacola Bahia that was mixed with legumes in several pastures likewise was grazed closely in observational plantings.

Results of grazing trials at the Georgia Coastal Plain station at Tifton left doubt in the minds of members of the station staff about Pensacola Bahia on soils where other useful grasses are adapted. The dense Bahia sod competes with Bermuda and other grasses in pasture mixtures. Bahia tends to be tough and unpalatable in summer if not closely grazed, particularly where it is in pure stands. It also is scattered to all parts of the pasture by the cattle. This suggests that until we know more about these grasses we must exercise care in planting them on sandy upland; that is, in the same pasture with lowland where other grasses are grown in mixtures with clovers.

The eradication of the narrow-leaf Bahias is a problem about which little is known. We need to know how difficult it will be to kill these grasses in established sods and how persistent they will be from seed that ripened and dropped on the ground in previous years. We started eradication studies at three nurseries in 1946 and expanded them in 1947. These eradication studies include enough acreage to permit a thorough study of different methods of cultivation to determine the persistence of the grasses where the soil is well stocked with seed. Various sown crops are being planted after varying degrees of mechanical disturbance of the sod. These plantings will give information about the possibilities of smothering the young Bahia seedlings that may come up and also will give information about the growth of various legumes in mixtures with Bahia. These studies were discussed with members of the Tifton station staff who are anxious to have us get the information about eradication and of management in mixtures with legumes.

We have seen evidence in observational plantings that legumes can be grown with the Bahia grasses and that animals will eat these grasses during the entire summer and fall when they are in mixtures with legumes. We have had promising results with Caley peas (*Lathyrus hirsutus*) as a volunteering winter legume with Bahia grasses at the Americus, Thorsby, and Rock Hill nurseries. Peas came up through the dense grass sod in the fall and the grass remained green during the entire summer and fall after peas matured and died in the spring. This is a promising legume to grow with Bahia grasses on sandy soils where clovers are not adapted.

In spite of the promise both Pensacola and Wilmington have shown in observational plantings in nurseries and on a few farms, we are continuing to limit seed distribution to Florida and to a few farms in sandy sections of other States. We must know more about these grasses before making extensive distribution of seed outside Florida. The Bahia grasses have shown too much promise, however, to justify discarding them or waiting indefinitely for information about their possible usefulness. We cooperate with many soil conservation districts where adapted grasses are needed on extensive areas of poor sandy soils.

Our need for further information about the

Bahia grasses was outlined in detail to give an example of what we face in the distribution of new species. We must be sure that we are not distributing plants that will become undesirable pests, but we are in immediate need of adapted vegetation on large areas where we now lack suitable plants. We need a way to get such information as quickly as possible and under conditions like those on farms.

The Land Utilization projects are in several different soil provinces and offer unusual opportunities for extending our observational studies of plants about which we need additional information. We have plenty of lowland and upland on these projects. These lands are being developed for grazing, and new grasses and legumes from the observational nurseries can be seeded as cheaply as the other plants that normally would be used. This permits large-scale plantings of the new species without any increase in the cost of project operation.

Grazing is an important phase of observation work. Grazing cannot be done at the regional nurseries because we do not have the livestock, the fences, nor the personnel that would be required. Likewise, the State experiment stations usually are not in a position to make as extensive grazing studies as we would desire because they already are doing as much grazing work as their facilities will permit.

After grazing land at the Land Utilization projects is developed, farmers pay a monthly rate for livestock pastured. Personnel at the projects look after the different tracts in which livestock are pastured and it will be no extra trouble for them to make necessary general observations of the way animals eat the different species during the grazing season and to observe the condition of the animals.

This general observational study will not give information as useful as could be had through definite research under controlled conditions, where detailed studies could be made and quantitative results obtained. This approach simply affords us an opportunity to carry observational studies through a field-scale phase before offering seeds or plants of new species to soil conservation districts.

Observational plantings of species from the nurseries have been made at several of the Land Utilization projects during the past several years. Rather large-scale plantings of Caley peas were made on both kudzu and sericea on very poor sandy soils at Tuskegee, Ala. Gandiflora vetch was seeded at Tuskegee and small areas were planted to sweet lupine and other species.

Wilmington Bahia grass (*Paspalum notatum*) was sown on 10 acres of a 100-acre pasture on sandy river bottom soil at Greensboro, Ga., in 1943. A well-distributed stand of the Bahia grass was grazed by cattle in the summer and fall of 1947. The grass was eaten as readily during the summer as Bermuda and Dallis grass, which were in the sod. In the late summer and early fall, Bermuda grass was not grazed closely during an extended drought and, to our surprise, Bahia was grazed as closely as Dallis grass. This does not give us conclusive information about the value of Wilmington Bahia grass on sandy soils, but it adds much to the information gained in the observational nurseries.

Weeping love grass (*Eragrostis curvula*) has grown well on poor soils in observational nurseries. This grass was grazed closely by livestock in limited plantings in one of the pastures at Dalton, Ga. Additional seedings were made on poor soils at Dalton and growth was good. We still lack much information about the possibilities of love grass, particularly in mixtures with legumes.

Our experience at the projects where different species were planted was so satisfactory that we decided in the spring of 1947 to make a more comprehensive study of several grasses and legumes at Dalton. We visited the project in late May with a representative of the State office, the district conservationist, and two nursery managers, to plan several different combinations of grasses and legumes for seeding in the fall of 1947 and the spring of 1948.

Among the observational seedings planned are: drilling Kentucky 31 fescue on old stands of sericea in the fall; seeding a mixture of fescue and sericea together in the spring; seeding rescue grass (*Bromus catharticus*) on sericea in the fall; seeding Caley peas on stands of kudzu and sericea; sowing hard-seeded crimson clover on kudzu and sericea; seeding mixtures of Ladino clover and fescue on lowland and upland; sowing fescue and Wilmington Bahia grass in a mixture to determine whether either will crowd the other out; seeding

(*Continued on page 168*)

DRAINAGE KEEPS WILLOW GROVE "High and Dry"

Willow Grove after completion of drainage system. Looking upstream on the Columbia River (right).

By HERBERT BODDY

FOR YEARS HIGH WATERS from winter rains and spring freshets kept the people of the Willow Grove community, near Longview, Wash., on the defensive. Today, the outlook is bright for the little dairy settlement that turned to conservation farming to work out its problem of too much water.

Willow Grove's 34 landowners, members of the Cowlitz Soil Conservation District, scrapped their old drainage system for a new way of handling surplus water. The Longview office of the Soil Conservation Service laid out a drainage system which effectively drained all of the settlement's swales, ponded lands, and 100 acres of idle sedge.

Some Willow Grove landowners recall that in 1933 they crossed their flooded pastures in boats in one record rainfall period. Later, in an average season, from 3 to 4 inches of water covered the flat, diked-in lands. Ponds dotted the pastures and water from the ditches spread over the fields. Under these conditions, the landowners agreed, farm production fell far short of the mark they believe their farms should have yielded.

By the time the Cowlitz Soil Conservation District was voted in 1945, the people of Willow Grove were ready to do something about their waterlogged pastures.

A group of dairymen laid their drainage problems before the district governing body of the Cowlitz district. The commissioners of Diking Improvement District No. 15 sought aid, too, in improving their old drainage system. The district supervisors took up Willow Grove's water problems with Forrest E. Bernath, head of the district office of the Soil Conservation Service in Cathlamet, Wash., who worked out a year-around drainage system for the community.

Tom McGourin headed a three-man crew of technicians and engineers who surveyed the drainage problems of 34 farms. They were given specialized aid from Francis K. Museus, in charge of drainage work for the regional engineering division in Portland.

When the technicians went over the ponded and waterlogged areas, they checked the amount of soil conservation work that had to be done. They took note of the work required to dry up the idle sedge land, drain pastures and croplands, and put all the farms on a capacity-yield basis. They then outlined a new drainage program at a meeting of the district governing body, diking commissioners, and farmers.

Bernath explained that around 19,500 feet of diking district ditches would have to be widened and deepened and 24,000 feet of new ditches constructed to keep the community "high and dry."

The Service's field staff next gave technical assistance to the district supervisors and diking commissioners. They staked out the pattern of new ditches to crisscross the farm lands. They marked out field boundaries to conform to the course of

NOTE.—The author is assistant in the current information section, Soil Conservation Service, Portland, Oreg.

the ditches and they listed the drainage ditches that had to be constructed. Technicians also recommended the conversion of the manual-type pumping plant to automatic type to give around-the-clock control over the drainage water.

Dragline operations and ditch construction work were let on contract to a local firm. By the end of 1946 Willow Grove landowners had a completed drainage system that was dry as a chip less than a year after Cowlitz district was formed.

A real test came last winter when rainfall totalled 14 inches in 8 days. Within 24 hours after the rains stopped, the water level in the ditches dropped to the fall average of three feet below ground level.

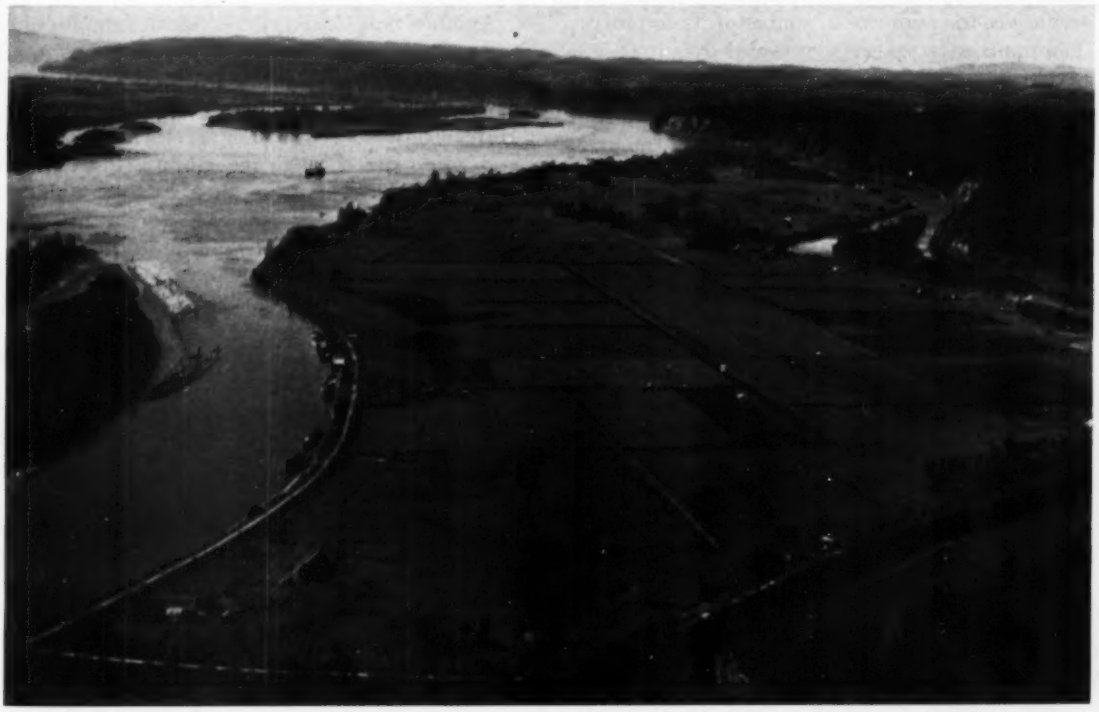
Around 41,500 cubic yards of diking district and private farm spoil banks were leveled off in the area during 1947. Willow Grove farmers have begun applying land-improvement practices under the complete land-use program worked out with the district supervisors and the Soil Conservation Service.

Two Willow Grove farmers, J. William Amtilla, a supervisor of the Cowlitz Soil Conservation District and chairman of the board of diking commissioners, and C. E. Fisher, a dairyman, sum up the opinion of the community's farmers.

Says Amtilla, "We expect to be able to farm our lands at least 10 days sooner each spring as a result of our new drainage system. The increased forage I will get from my drained pastures will enable me to double the size of my dairy herd."

And Fisher remarks, "I believe Willow Grove stands to gain everything from the new drainage ditches the Soil Conservation Service helped us put in. Getting rid of the sedges and draining my land will give me the chance I've wanted to seed better grasses and legumes. By applying the practices set forth in my farm-conservation plan, I should double my forage. I am milking 34 cows now and I expect to be able to step the herd up to 50 before many months."

Since completion of the Willow Grove drainage program, requests have been received by the supervisors for similar technical assistance from three of the five other diking-improvement districts in Cowlitz County.



Willow Grove farmers expect to double output as result of drainage. In this view can be discerned drainage ditches before leveling of spoil banks. At left—center—are brush piles from newly cleared area. Dark area at right—center—is sedge, indicative of poorly drained land. Pump house and tide gates are at apex of bend, upper right.

Honor Awards Ceremony on Monument Grounds

Bennett and Anderson . . . Hafenrichter . . . Johnson . . . Bailey

IN CEREMONIES attended by more than 2,000 persons at the wind-swept Sylvan Theater on Washington's Monument Grounds, the Department of Agriculture on November 12, 1947, recognized with medals and citations the outstanding services to the public of a number of its employees. The impressive program, presided over by Secretary Clinton P. Anderson and enlivened with music by the Navy Band, inaugurated a custom to be observed annually.

Dr. Hugh H. Bennett, Chief of the Soil Conservation Service, was the first of five individuals to receive the Department's Distinguished Service Award. To him went a gold medal and a warm personal felicitation from the tall Secretary of Agriculture, accompanied by the official citation: "For his achievement in the field of soil and water conservation which has benefited American agriculture and contributed to the welfare of people throughout the world."

Richmond Y. Bailey, otherwise known as "Dick" or "Kudzu," was presented with a silver medal—a Superior Service Award—together with commendation for "service to Southern agriculture in the field of soil and water conservation, through his work on diversification, land improvement, and stabilization." Bailey is regional chief of agronomy, with headquarters at Spartanburg, S. C. His colorful personality and gift of phrase-making, combined with his ability to clarify and dramatize the conditions and land needs of his area, have done much to oust cotton as king and to bring about erosion control and diversification. He helped to popularize the agricultural use of kudzu and other legumes in the South, and to open up new opportunities for prosperous conservation farming.

Another Soil Conservation Service employee to receive a Superior Service Award was Dr. Atlee L. Hafenrichter, chief of the regional nursery division, with headquarters at Portland, Oreg. Hafenrichter was cited "For service to agriculture and rural life through assembling, testing, and developing large numbers of plants adaptable to inter-mountain and Pacific coast agriculture. His work is recognized as outstanding in this country, and his methods are also being practiced in several foreign countries, particularly in China and South America. Under his direction, many plant accessions from local and foreign sources have been observed, analyzed, and put to work as protective cover for the land and as new sources of cash income to the farmer.

Arthur J. Johnson, general mechanic with the Soil Conservation Service at San Fernando, Calif., was presented by Secretary Anderson with a Superior Service Award "For initiative, industry, and ingenuity in developing new methods and equipment adaptable to soil conservation practices." Many ingenious devices emerged from the imaginative mind and skilled hands of Johnson, from which all agriculture is benefiting today. Among them was an elevator device for cleaning and handling many different seeds; his innova-

tions were of such practical importance as to be adopted by large seed producers in Washington, Oregon, and Idaho. Among his numerous innovations are a "compensating shaker" type of seed scalper, a portable seed processor, and binder reels for harvesting such crops as California needlegrass.

A unit award (presented at a later date at the local headquarters) gave recognition to the Tulia, Tex., Work Unit of the Soil Conservation Service "For outstanding accomplishments in applying soil conservation practices and exceeding accomplishment goals for the year 1946."

In setting accomplishment goals for 1946, Chief Bennett asked that 1945's record be doubled. The Tulia Work Unit not only met this challenge but more than tripled the State average in combined acreage treatment. This performance resulted from improved work methods, organization of working time, scheduling activities in advance, use of the group approach, employment of effective training methods, encouragement of cooperator participation in all features of the program, and stimulation of loyalty, high morale and team work among the personnel of the unit.

Wrote Secretary Anderson in connection with this first annual ceremony of the kind: "The high quality and specialized competence of Department of Agriculture employees is traditional * * *. Our employees have over the years developed a great pool of useful knowledge in the field of agricultural science * * *. Today, following a pattern developed in this Department, we are attempting in some small measure to honor those who have signally contributed to the Department's objectives of improving American farm life and serving the Nation as a whole. We are acutely aware that others, quite as deserving of awards * * * have not yet come to light. We hope that today's ceremony will help us to find and reward them and will also act as a stimulus and inspiration to even greater achievement and more faithful service on the part of every employee * * *."

THEY LOOKED AT THE LAND FROM A PLANE

By E. V. JOTTER and S. C. HARTMAN

AN AIR TOUR was the novel means used by the Guernsey Soil Conservation District to familiarize selected high-school students and key citizens with the present conditions of the community's most vital natural resource—the soil.

"Most effective" was the way the program was evaluated by Dwight Moore, Cambridge, Ohio, district chairman.

In addition to the educational motive, the district supervisors desired to bring out the fact that everyone can do something about the land. Accordingly, representative citizens were given rides as guests of the district over a carefully planned route. Guests included representatives from every high school in the county, and from New Concord High and the neighboring Muskingum College, school faculty members, public officials, rural and urban ministers, chamber of commerce, the press, the Ohio Division of Conservation and Natural Resources, the Grange and Farm Bureau and other rural and urban groups. Others were encouraged to take the tour for a moderate fee and to receive all other advantages of the guests.

The district supervisors have the ultimate purpose in mind of making the development of farm plans an easier task for SCS technicians, and enabling them to devote maximum time to actual farm planning and as little as possible to explaining the advantages and the fundamental principles of soil conservation.

The tour was routed over farms on which the various conservation measures were being carried out, the farms being identified by numerals marked in lime. The fields on these farms were easily identified by the dark green foliage. The old cropping pattern of square fields contrasted sharply with the modern strips. The varied patterns on strip cropped fields reflected the differences in field topography, since the strips were tailored to the land. Other farms included in the tour showed the need for soil conservation measures.

The pilots who flew the passengers had much to do with the success of the tour. They had been lectured previously, flown over the tour, and had their attention called to the significance of what

NOTE.—The authors are forester and district conservationist, respectively, Soil Conservation Service, Cambridge, Ohio.

Kneeling, left to right: Donald Spencer, treasurer, district board of supervisors; P. W. Griffiths, Congressman; Mayor Ross, of Cambridge, and Walter Springer, secretary of the Cambridge Chamber of Commerce. Standing: Dwight Moore, chairman, district supervisors; Ray Finley, secretary; Paul Watson, vice chairman; and Fred Gunn, equipment supervisor.

lay below. Numerous passengers commented favorably on the usefulness of this schooling.

All who took the flight were briefed in advance as to what was to be seen. Each person was also given a mimeographed guide which included a map of the area covered.

Information concerning the farms observed, together with other educational material to stimulate interest and thought, was applied. The social and economic significance, as reflected in the welfare of the community and State, were emphasized.

The erosion problem, stated briefly, is that the average soil loss from the district has approximated 2 million tons per year for the past 100 years. Were the loss reduced to the rate from the Seneca Lake area the loss for the district would run around half a million tons per year. Loss for the district as a whole is much greater than that, being estimated at something over 1 million tons per year.

The Guernsey District has within it approximately 2,000 farms with an average of 135 acres. Several hundred farms have small acreages, too small for economic units, many of them country homes.

To date, 210 farmers have developed complete soil conversation plans. The plans call for 3,500 acres of strip cropping and improved rotations, 7,000 acres of pasture improvement, 4,200 acres of woodland improvement—to mention a few common practices.

A feature of the program was a talk by Congressman P. W. Griffiths. The Congressman took the tour, accompanied by Chairman Moore and the local farm planner, George W. Eikenberry. District supervisors had the opportunity to present their distinguished guest an outline of their program and some of the problems encountered, as well as their idea of what is needed for the proper development of the local and National soil conservation program.

Chairman Moore holds that such a program cannot be successful without full community cooperation. "The success of the tour far exceeded

my most optimistic expectation," he says. The explanation is that everyone cooperated wholeheartedly. In planning the program I first went to Walter Springer, secretary of the Cambridge Chamber of Commerce. That was some 6 months in advance. He worked out a committee and obtained the cooperation of various groups. Assisting greatly were Robert Amos, editor of the Jeffersonian, and Mrs. E. L. Grossman, representing out-of-town newspapers. Others cooperating included the county agricultural agent, the AAA, the Ohio Division of Conservation, press, radio, Grange, Farm Bureau, service clubs, schools, churches, equipment and feed dealers, milk processors, and many other rural and urban groups.

Not the least important members of the team were the Cambridge and Lore City Airports, and the Cambridge Flying Club. Ohio University, with Ralph Smeck as director of aviation, furnished a four-place Stinson plane. Kenyon College, with Robert Morgan, a Cambridge boy, director of aviation, furnished a two-place Cub Trainer. The Ohio Flying Farmers Club was represented by Cliff Coffman, past president, with a two-place Aronca-Chief.

Comments from those who took the rides were varied. "We surely had the best pilot to explain the tour," was said of several different pilots. "Very interesting and stimulating * * * We wish you well in your program of conserving one of God's richest blessings to man, 'the good earth,'" came from the Ministerial Association. An editor, "More has been achieved in the way of conservation than I had realized." A representative of a soil conservation district, "I'm amazed at the stupendous job yet to be done." An educational expert, "Very important. It presented a rare opportunity to view our agricultural resources." A high-school student, "The group certainly appreciated the trip, which showed the results of erosion and how improved farming will combat it. All the students had a lesson which will affect their entire future." Several executives made the statement, "The plane has been used to advantage in presenting soil conservation. I see where we can study our job better and quicker by its use."

A KANSAN TALKS ABOUT GRASS.—Tuesday afternoon we let us'-ns down on a 20-foot rope to the bottom of the 30-foot ravine in our pasture and put our gray mare, Freda, out of her misery. Sometime after 5 p. m. Monday she fell into the chasm and injured herself internally and lay unconscious in the pool of bloody water. We got lots of practice in camp at various methods of killing but we still hate to kill even a horse for mercy. We didn't really kill the mare. The farmers who tilled the soil round-about in the days gone by, taking great pride in their straight rows which ran the length of an 80, really did it. Even in the span of our short life that ditch was just a small depression for half its length.

Straight rows, destruction of grass and topsoil, are leaving our fertile Doniphan County open to destruction through erosion. Even though the demand for grain is great today, much more of our land should go back to grass—and the remainder with proper rotation and water control, could still supply the need. Our fellow Kansan, the late John J. Ingalls, puts it in a nutshell and here are pieces of the shell: "Next in importance to the divine profusion of water, light, and air, those three physical facts which render existence possible, may be reckoned the universal beneficence of grass." Grass is the forgiveness of nature—her constant benediction. Fields trampled with battle, saturated with blood, torn with ruts of cannon, grow green again with grass, and carnage is forgotten. Streets abandoned by traffic become grass-grown, like rural lanes, and are obliterated. Forests decay, harvests perish, flowers vanish, but grass is immortal. It invades the solitudes of deserts, climbs the inaccessible slopes and pinnacles of mountains, and modifies the history, character, and destiny of nations. It yields no fruit in earth or air, yet should its harvest fail for a single year, famine would depopulate the world." Said the psalmist of old: "The Lord is my shepherd, I shall not want. He maketh me to lie down in green pastures, He leadeth me beside still waters." There are those who expect the streets of heaven to be paved with gold. Perhaps the Great Conservationist has chosen grass, the peaceful covering of parks and cemeteries to carpet our place of eternal rest.—Ralph Brazelton, in Kansas Chief, Troy, Kans.

WILDLIFE ON FARMS.—The following statement is taken from the latest annual report of the Pittman-Roberston program, through which Federal aid is made available for wildlife restoration:

"The establishment of wildlife areas on farms and ranches was undertaken by 14 States in cooperation with the landowners, soil conservation districts, and other conservation organizations. The improvements included fencing, posting, tree and shrub plantings, food patch seedings, feeding shelters, and water improvements. Watering devices have proven to be of great value to desert wildlife in California and Arizona. Five of the Southeastern states continued lespedeza seed and seedling distribution by which 11,509 pounds of bicolor, 21,125 pounds of sericea, and 1,102,750 bicolor seedlings were planted."

HIS GARDEN WAS THIRSTY.—John Heebink, who farms south of Souris, N. Dak., reports excellent results from irrigating his garden from a dugout constructed 4 years ago. Last summer was the first time he really needed to irrigate his garden since the dugout was made.

Heebink says: "This dugout furnished sufficient water for my garden, and we had the best garden of anyone in my vicinity. We not only had plenty of vegetables for our own use, but a surplus that our neighbors used. As the dugout is located close to the garden spot, I used 75 feet of three-quarter-inch garden hose and 40 feet of one-and-one-quarter pipe to reach the garden area. The pump has a capacity of 1,200 gallons per hour, and I used the

tractor for power. I watered the garden once a week during the dry spring and early summer but really gave it a good soaking each time.

"My dugout catches the spring run-off from the snow banks in the tree belt, but is not deep enough, I am afraid, for all conditions, so I am planning on having the Turtle Mountain Soil Conservation District deepen it for me either with a dragline or by blasting, in order to increase the storage capacity."

John Heebink is a cooperator with the Turtle Mountain Soil Conservation District and follows a complete farm conservation plan.

PASTURE PROGRAM PUSHED.—"It is in this economical production of an abundance of feed that my conservation practices have been most beneficial," writes C. B. Parr, Newberry, S. C. "The practices include the terracing of my entire farm and making the proper vegetated outlets. I have improved 25 acres of permanent pasture, 8 acres of kudzu is in production for grazing, and I have established 12 acres of sericea lespedeza which I use for both hay and grazing and 3 acres of alfalfa for hay. All of these have materially increased, economically, the production of milk from my herd. With the assistance of district personnel I am trying out two new crops which seem to be adapted to my farm and which will further affect the economy of my farm. Of these, the narrow leaf Bahia grass seems to offer good prospects on droughty areas of my permanent pasture, and rescue grass for economical use as a winter and early spring temporary grazing crop.

"Last summer I built a 5-acre farm pond which I plan to use as a watering pond for my stock and am also stocking and will manage it for fish production.

"My only regret is that this conservation work didn't start years ago."

SPUD YIELD ZOOMS.—Andy Floy, farmer of Pine Bluffs, Wyo., reports: "When I was dry farming one good rain would have meant $12,000 to me, but it didn't rain. That is the reason I drilled an irrigation well."

With the help of technicians assigned to the Southeastern Laramie County Soil Conservation District, Flow constructed a 375-foot dike and spent a day and a half leveling land with heavy equipment supplied by the district, and laid out a carefully planned irrigation system.

This work, which cost him $175, enabled Floy to irrigate 65 acres of potatoes which yielded over 20,000 bushels of certified seed. The potatoes he could not reach with irrigation water yielded approximately 50 bushels per acre.

Floy's complete farm plan includes three other irrigation wells and 3 miles of shelterbelt plantings. A windbreak for the farmstead is provided.

As the soil is sandy loam and subject to wind erosion, the shelterbelt runs on the north and west sides of each 40 acres of irrigated land.

"With all my wells drilled and the irrigation systems laid out and crop rotations well on the way to being established, I'll be able to produce enough crops under irrigation to retire what land I cannot irrigate to crested wheat grass."

GRASSES and LEGUMES TESTED

(*Continued from page 161*)

various legumes in mixtures with Wilmington Bahia and with weeping love grass. This incomplete list illustrates something of the scope of the observational seedings that are being made.

All species will be grazed by cattle. In most instances, several different mixtures will be included in the same pasture so that the choice of animals will be observed.

The Dalton project was chosen because of the large acreage of pastures already developed in which grass and clover mixtures were seeded on the lowland and sericea was sown on the upland portion of each pasture. These extensive acreages of sericea are available for overseeding with different grasses and annual winter legumes. A large acreage of kudzu also was planted at Dalton and is available for different types of overseeding.

Observational plantings will be extended to other projects as seems desirable and as seed is available. The extent to which cattle grazed Wilmington Bahia grass at Greensboro suggested that it might be more palatable than Pensacola. Additional portions of the pasture in which the first Wilmington Bahia seeding was made were sown to Wilmington, and other acres to Pensacola Bahia, in the fall of 1947. The grazing of cattle on the two grasses will be observed.

Technicians of the research and operations divisions of the Service will be encouraged to visit the projects for study and observations of the different seedings. We also plan to advise State agricultural experiment station workers of the whereabouts of the different projects and invite them to visit and study any plantings that may interest them. We believe that in this way we can make these plantings of maximum usefulness.

We want to emphasize that this is not a research project. It is simply an expansion of observational studies that are started in regional nurseries. Our primary objective is to get more knowledge of the possibilities, both desirable and undesirable, of new species before they are taken from our nurseries to private land. We hope through these observational plantings to give Service personnel and representatives of other agencies an opportunity to know more about our nursery program.

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